DOCUMENT RESUME

ED 338 575 SP 033 352

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TITLE To Grow and Glow: Towards a Model of Teacher Education and Professional Development.
PUB DATE Jul 90
NOTE 50p.; Paper presented at the Meeting of the International Council on Education for Teaching (Singapore, July 27-31, 1990).
PUB TYPE Speeches/Conference Papers (150) -- Reports - Research/Technical (143)

EDRS PRICE MF01/PC02 Plus Postage.
DESCRIPTORS Classroom Techniques; Cooperating Teachers; *Curriculum Design; *Developmental Continuity; Elementary Education; Foreign Countries; Higher Education; Humanistic Education; *Practicums; Preservice Teacher Education; Student Teachers; *Teaching Skills; *Theory Practice Relationship
IDENTIFIERS Constructivism; *Reflective Teaching; *Subject Content Knowledge

ABSTRACT

This study was conducted in order to examine the process of teacher development in a close interplay between educational principles and classrooms in a Singapore practicum curriculum. The process of teacher development is regarded as a continuous, self-renewing, lifelong process. Since no comprehensive constructivist model of teacher development has been advanced in the literature to guide in the design of teacher education programs, this paper seeks to spell out the rationale and relationship of the four basic components of a teacher development program with respect to: (1) subject matter; (2) teaching methods; (3) educational principles; and (4) classroom practice. Humanistic constructivism provides the underlying philosophy and pedagogy of the proposed teacher development model. Through a better articulation of teacher roles, internalization of educational principles, and reflection of classroom practices, teachers' professional development grows. Based on this model of teacher development in a practicum curriculum, some research evidence of professional growth is presented using student teachers' self-appraisal of their own and their cooperating teachers' classroom practice. (Author/LL)

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To Grow and Glow : Towards a Model of Teacher Education and Professional Development

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Paper presented to :

1990 International Council on Education for Teaching
27-31 July 1990, Singapore.

SP 033 352

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Abstract

With hindsight, we now understand the fallacy and inadequacy of traditional pre-service teacher preparation and development programmes which seek to equip teacher trainees with subject matter specialisation and some presumed effective and practicable classroom teaching skills. Recent advances in understanding the process of teacher development, such as the practicum curriculum in Singapore, attempt to foster a closer interplay between educational principles and classroom practice. The process of teacher development is also regarded as a continuous, preferably self-renewal, life-long process. However, no comprehensive constructivist model of teacher development has been advanced in the literature to guide us in the design of teacher education programmes.

This article seeks to spell out the rationale and relationship of the four basic components of the teacher development programmes, viz subject matter, teaching methods, educational principles, and classroom practice. Humanistic constructivism provides the underlying philosophy and pedagogy of the proposed teacher development model. Through a better articulation of teacher roles, internalisation of educational principles, and reflection of classroom practices teachers grow and glow in their professional development. Based on this model of teacher development in a practicum curriculum, some research evidence of professional growth is presented using student teachers' self- appraisal of their own and cooperating teachers' classroom practice.

Changing Perspectives on Teacher Education

Few doubt about the role of education for personal and social development and the importance of teacher education. However the structure of the teacher education programmes and the conception of the process of teacher professional development has changed during the last three decades. Teacher education during the post- war period seeks to equip teacher trainees with subject matter specialisation and some presumed effective and practicable, often disciplined-based and classroom-centred, teaching methods. In Western societies such as USA, the failure of curriculum reforms in raising academic excellence and the prevalent practice of behaviourism catalysed the development of competency-based teacher education. The post-war baby-boom period also witnessed a fluctuating demand and supply of trained teachers. The professional development of teachers was far from being optimal or adequate.

With the advent of information technology and the development of empirically-based learning models and pedagogical principles, teacher education during the 80s moves towards preparing teachers as a profession although fraught with problems such as low status of teachers and inadequate preparation for the changing roles of teachers. The entry education level of teachers has been raised and the period of pre-service teacher education lengthened. Teacher education for beginning teachers tends to be more school- and practicum-based, together with more systematic teacher induction and on-the-job teacher supervision. In-service teacher further

professional education, possibly via distance learning such as the open university, is growing popular. The conception of teacher development extends throughout a teacher's career and teachers assume more responsible roles. Teacher education then aims at helping teachers, throughout their life- long career, to realise their assigned roles using the most up- to-date technology and knowledge. Teachers are initiated to be more adaptive in their teaching methods and to provide negotiated learning experiences because learning is now increasingly considered as a meaning construction process.

The changing perspectives of teacher education and professional development reflect the belief and value systems of a society. Developed so far world-wide, four core components are visible in most teacher education programmes, viz subject matter, teaching methods, educational principles, and classroom practices. The practicum curriculum in Singapore is one example attempting to foster a closer interplay between theory and practice. More further professional education programmes are being offered particularly for those who are likely to assume additional or new roles. The future of teacher education and professional development will depend on a clear articulation on the rationale and relationships of the four basic components of teacher education programmes.

With these in mind, this article attempts to explicate a model of teacher education and professional development employing humanistic constructivism as a guiding philosophy in the understanding of the process of interplay between theory and practice, viz. reflection

of educational practices and internalisation of educational principles when pupils are engaged in the process of 'knowing'. Hopefully, the model will make clear some of the component processes and obstacles in teacher professional development and is useful in understanding designing life-long teacher professional development programmes.

A Model of Teacher Professional Development

The proposed model has been concisely summarised in Figure 1. The two traditional teacher education components of subject matter understanding and pedagogic skills contribute to the teacher competencies knowledge base and are built on a clear understanding of the aims and content of education. At the heart of the model is the constructivist and moral enterprise of classroom practices. Teachers, as educated professionals, are delegated a number of roles and responsibilities and the role as a facilitator of learning is contended to be the most prominent one especially amongst beginning teachers. These roles are performed within a multi-level and multi-dimensional learning context. Since pupils, and perhaps teachers as well, bring different ideas and conceptions of phenomena into the classroom, some perspectives of teaching and learning are needed to explain the process of 'knowing'. Humanistic constructivism is one such perspective that can be based upon. Consequently, teachers are more than a craft-person but possess their own theories of actions enabling reasons to be given for their educational practices. The other two teacher education

components seek to foster a closer interplay between theories and practices. This interplay is fostered via one's own reflection of educational practices and internalisation of 'local' theories of action. The processes of reflection and internalisation are actually two faces of the same coin,occurring at the same time prompting for revised conceptions and action plans. It should be emphasised that a critical appraisal of one's educational practices should be self-initiated and teacher development programmes should seek to initiate the beginning teachers to the need, rationale, and the procedures of the appraisals. Hopefully, continuing self-renewal and autonomous decision making are achieved by outcome if the needed collegial and organisational support are available.

Five aspects need to be further explicated to spell out the constructivist and moral enterprise of classroom practice in order that a practicum curriculum for beginning teachers can be planned and its rationale understood : (1) A humanistic constructivist pedagogy; (2) Delineation of instructional roles; (3) Reflection of classroom practices; (4) Internalisation of educational principles; (5) Action research for teacher renewal.

1. A Humanistic Constructivist Pedagogy

Constructivism is one of the more recent perspectives that has put forward to account for how learners get to know (see Cheung, forthcoming). Learning, viewed from this perspective, is a meaning construction process. To borrow the terminology of Piaget, the cognitive process involves the replacement of exogenous learning

experiences by endogenous reflexive cognitive reconstructions and this process is subordinated to both maturative and experiential development. Knowledge, or curricular content in particular, is both personally and socially constructed. While most knowledge nowadays, particularly in Western societies, is constructed in an objective way, the cognitive constructive process is guided by the prior conceptions of the learners and driven according to the social human needs framed within a developing cultural context. A constructivist pedagogy should thus focus on the processes occurring in the mind-environment interface with learning tasks set within a variety of negotiated learning contexts with due regard paid to the alternative conceptions and 'habits of the mind' of the learners. The role of the teacher is more of a diagnostician of learner's misconceptions and mediator between public and personal knowledge than a mere moral craft-person. The simplistic notion that knowledge is imparted or acquired has limited credibility because learning has got to be meaningful.

2. Delineation of Instructional Roles

Teachers have different roles to play during the different stages of their teaching career when they assume different responsibilities according to their positions. These roles may include facilitating pupil learning, pastoral care, curriculum development, and school management. For beginning teachers, the role as a facilitator of learning is perhaps of upmost importance because this can serve as a spring-board and foundation for the

more adequate understanding of the educational enterprise.

Regarding this important role, the Institute of Education of Singapore has attempted to delineate five of the more pertinent instructional roles for pre-service teacher development, namely: planning, inducting, communicating, managing, and evaluating. During the practice teaching, beginning teachers need to be supervised and assessed on those competencies cataloguing under these pedagogical skills which should not be viewed as entirely content-free. Specifically, planning involves delineating learning objectives, selecting content, materials and media, and the determination of instructional procedures. Inducting seeks to develop procedures of arousing interest, encouraging participation, and stimulating thinking. Communicating trains teachers on skills such as explaining, informing, questioning, responding, together with the appropriate use of media, resources, voice, and the command of language. Managing entails establishing rapport, managing behaviours, grouping and individualising of students, and managing students' time-on-task. Evaluating initiates the teachers into the habits of monitoring learning outcomes through the use of feedback, maintenance of diagnostic records, and encouragement of self-evaluation.

3. Reflection of Educational Practices

Dewey's (1933) seminal book of "How we Think ?" has explicated the relation of reflective thinking to the educational process. According to him, reflective thoughts occur following five phases

: (1) suggestion for a possible solution, (2) perplexed feelings and brain searches into a problem for an answer, (3) hypothesis formulation and collection of evidences, (4) reasoning and elaboration of the central idea or supposition, (5) hypothesis testing by overt or imaginative action. Since then, Dewey's theory of reflective thoughts and the principles of pedagogy it inspired were restated again and again and have taken a revered place amongst theories of teaching and learning (for a discussion see, for example, Ross and Hannay, 1986). Cruickshank and Zeichner are amongst the many teacher educators who respectively have actively advocated and tested out different versions of reflective teaching in the past decade.

Cruickshank (1985) has employed reflective teaching to introduce student teachers to the role of the teacher and to the tasks of teaching. In a laboratory micro-teaching classroom setting, students plan lessons, teach them, assess learning outcomes, and engage in small and whole group discussions reflecting on their teaching. To Cruickshank, reflective teaching is real teaching. Furthermore, it is role taking, not role playing with the advantage of a laboratory learning environment facilitating early feedback, evaluation, and modification of teaching. However, his technocratic positivistic approach to reflective teaching was criticised to divorce subject matter from teaching method and was viewed as a narrow extrapolation of Dewey's ideas because the contrived nature of the experience may actually inhibit the development of teaching that is genuinely reflective (Gore, 1987).

Approaching reflective teaching in another way, Zeichner (1981-82) incorporated attitudes of open-mindedness, responsibility, and whole-heartedness which he considered are prerequisites to reflective action. He further expanded Dewey's notion of reflective thinking to include considerations of ethical, moral, and political principles. On a similar stand, Olson (1989) viewed educational practice as a socially-based process involving both exhibitions of human virtues and demonstrations of standard of educational excellence rather than merely a craft or an expertise. Consequently, reflection on educational practice requires an examination in relation to the broader institutional and cultural setting.

The support system for practising reflective teaching needs more scrutiny for fulfilling its goal of teacher professional development. Wildman and Niles (1987) have suggested that moving from the model of teacher as a technician to that as a reflective practitioner is problematic because student teachers' understanding of their teaching process is more utilitarian than analytical and their descriptions of classroom events lack the focus and elaboration for productive reflection. They proposed that teacher reflection should benefit from an internal locus of control for more teacher autonomy and decision-making power. However, necessary attitudes and resources, such as collegial support for nurturing reflection, cannot be taken for granted in the workplace.

Van Manen's (1977) ideas have contributed to resolve some of these problems. He identified three levels of reflection with

different perceptions of problems and consequences for action. The first level of technical rationality concerns the efficient and effective application of knowledge for the purposes of attaining ends which are accepted as givens. At the second level, the assumptions and predispositions of practical actions are clarified. The consequences of an action are assessed and the worth of competing educational ends considered. The highest level incorporates moral and ethical criteria into the discourse about the practical action. The Wisconsin's inquiry-oriented elementary education student teaching program, based on these concepts of reflective action, has attempted to educate student teachers as a reflective practitioner (Zeichner and Liston, 1987). Specifically, the program educated the beginning teachers to view their knowledge and the learning contexts as problematic, to view the teacher as a moral craft-person, to approach the knowledge offered in the program reflexively, and to interact with others in a collaborative fashion.

Claims about the benefits of reflective teaching are abundant in the literature. Peters (1985) has suggested a number of cautions regarding the variations or findings on the benefits of reflective teaching : participants' lack of interest, number of hours participants spent in reflective teaching, the fact that attitudes are difficult to change over a short period of time, and the instruments used to collect data were thought to have influenced the results found on hypotheses tested.

The state of the art of reflective teaching has been reviewed by

Zeichner in 1987, who discussed six approaches to the preparation of more reflective teachers during preservice teacher education. He remarked that "what is that teachers reflect about and the degree to which their enquiries potentially empower them to control their own destinies and the nature of the settings in which they work are areas where one can find substantial differences across approaches (p.566)". One distinction among the various approaches is the degree to which an approach is explicitly justified by reference to a particular theoretical position such as conceptions on learning theories, realities, and the role of the teacher. Furthermore, numerous claims have been made with regards to the benefits of these prospective reflective teaching approaches. Amongst these claims are awareness of educational problems, perception and analysis of variables in a teaching episode, justification of classroom actions, awareness of personal values and implicit theories, consideration of the moral and ethical dimensions of teaching, growth in critical thinking skills, flexibility and openness to change. Unfortunately, these claims remain largely unsubstantiated and research into reflective teaching needs to be able to document the particular contributions of components of preservice teacher education programs and to identify the ways in which particular approaches enhance the reflective capabilities of teachers (Zeichner, 1987, Wodlinger, 1990).

4. Internalisation of Educational Principles

The production of revised action plans that are explainable by some pedagogical principles or personally constructed 'local' theories is one important outcome of reflection of educational practices. Wildman and Niles (1987) commented that systematic reflection takes time because developing descriptions, examining beliefs, and contemplating changes in one's practice are not automatic routines. The process of reflection involves successfully managing the risk inherent in examining one's action against beliefs so that revised action plans can be formulated for self-renewal and it occurs at teacher's pace and responsibility. Following Wildman and Niles's argument to the process of internalisation and with some modifications, the question to answer is "In what ways and under what assumptions can we justify how is what we are doing affecting our students?"

This question, although simple enough, does not always have straight-forward answers even for experienced educational researchers. For example, Ross and Kyle (1987), in their discussions on helping preservice teachers learn to use teacher effectiveness research, argued the importance that the student teachers to develop the ability to reflect on conflicting research findings. They asserted that teachers must vary lesson format and control based on their goals and that when less structured outcomes are desired less structured methods are required. On similar ground, Shulman (1987) has commented that new comprehension of teaching and learning does not automatically occur, even after

evaluation and reflection. Student teachers need to review, analyse, reconstruct, reenact, and ground explanations in evidence. Teacher development is a form of experiential learning leading to new comprehension of purposes, subject matter, the student body and the self. He further proposed a model of pedagogical reasoning and action emphasising teaching as comprehension and reasoning, as transformation and reflection.

Consequently, personal theories of action are at the heart of the process of the internalisation of educational principles resulting in revised action plans. Ross and Hannay (1986) have argued that a reflective-approach to teacher development should be based upon the dual foundation of the Deweyan dialectic approach to reflective thinking and a critical theory of education which incorporates the application of the principles of action in reflective inquiries. They further criticised that personal theories of action, based on past experiences and reflections, are not usually acknowledged by teacher educators as legitimate sources of knowledge about teaching and learning. 'Critical reflectivity' incorporates the consideration of moral and ethical criteria in addition to reflective thinking procedures.

Clearly there are no hard and fast rules on what specific aspects of moral and ethical criteria should be considered. However, some general guidelines are still possible. Specific in the Singaporean context, Lee (1979) has advised that in the planning of education the best of the East and of the West must be blended to the advantage of the Singaporean, ie. the Confucianist

ethics, Malay traditions, and the Hindu ethos must be combined with the sceptical western methods of scientific inquiry and the open discursive methods in the search for truth. Sim (1990), in a study of the influence and relevance of western theories to teacher education in Singapore, also pointed out that the validity of Eastern principles or maxims is often tested through intergenerational transfer of knowledge, with wide and continued acceptance and practice being the criteria, rather than short-term studies with representative samples as practised in the West. Rephrasing Lee and Sim's advice, traditional wisdom and cultural heritage should thus be cherished and consulted in adapting and practising modern empirically validated pedagogical principles.

5. Action Research for Teacher Renewal

Student teachers are adult learners and teacher development is a form of adult learning. Shrock and Byrd (1987) have commented that adult learning theories argue for greater learner control of both the methods and the objectives of the learning situations. Thus, teacher professional development should preferably be self-directed and be a life-long continuing self-renewal process. Classroom-based action research has emerged to be a plausible enlightening and renewal process for this purpose of teacher development.

Kemmis (1989) has elaborated the rationale and the need for classroom-based action research. He defined action research as a form of self-reflective enquiry undertaken by participants in

social and educational situations in order to improve the rationality and justice of their own social or educational practices, and situations in which the practices are carried out. He provided a classification of alternative styles of educational research, namely : positivist (empirical-analytic), interpretive (historic-hermeneutic), and critical. This classification is useful in understanding the stance and the nature of action research that beginning teachers can employ for their life-long professional development. The proposed process of teacher renewal draws on the interpretative and in particular the critical styles with different degree of emphases on aspects of these styles during a teacher's life-long career. Hopefully, beginning teachers gradually feel the need to understand and employ ideas of humanistic constructivist pedagogy. My own understanding of the rationale and the need for action research, after consulting Kemmis (1989), are as follows.

Schooling is everyday living experiences. It engenders meaningful learning for personal development and at the same time is used as an agent for social and cultural reproduction and transformation. The practical purposes of self-initiated school- and community-based enquiries are on the enlightenment of personal theories of actions so as to achieve self-realisation and more rational transformation of educational practices. With these in mind, the reflection of every-day educational practices and internalisation of personal theories of action involve development of forms of reasoning deliberative of informing judgement subsequently resulting in revised action plans with developmental

or emancipatory intent. Humanistic considerations on ethics, morality, and the broader social political environment should not be neglected. The aims and content of education should be well understood. Unsatisfactory educational practices should be self-rectified through both personal reflective and democratic dialectical means. Wherever possible, collaborative approaches and negotiations should be used to minimise ideological distortions on interpretations of practices. Hopefully, this will bridge the Rubicon of the more personal theories of action and the socially approved and mediated educational practices.

In a nutshell, continuing teacher renewal through personal reflective means to achieve self-actualisation will be useful for beginning teacher development. The democratic dialectical means are useful in guiding experienced teachers in the latter part of their career for democratic participation in transforming existing forms of social life. One way to achieve this transformation is through critical curriculum theorising by collaborating teachers. With regard to the specific role of teacher as a facilitator of learning, a humanistic version of constructivist pedagogy can be employed or consulted informing how our children get to know and how teachers should teach according to this perspective of teaching and learning.

Some Contributing Ideas

An experiment of reflective teaching that is based on this proposed model of teacher development for beginning teachers was conducted. Calderhead's (1987) work on the progression of beginning teachers undertaking reflective teaching and quality of reflective thinking, and Smyth's (etal., 1989) critical pedagogy of classroom practice are useful starting points for this experiment of pre-service teacher development.

In brief, Calderhead (1987) has examined the quality of reflection in student teachers' professional learning during their practice teaching and found that they typically progressed through three stages: fitting into the school and supervising teacher's routine, demonstrating and passing the requirements of the practice teaching, and exploring different types of lessons, alternative classroom organisation, and new subject matter. Student teachers quickly reach a plateau of the second stage after a few weeks of their practice teaching and several factors impeded further learning to the third stage. Amongst these factors are that student teachers rarely engage in any detailed consideration of the origins, purposes and contexts of their actions, and that they focused more on the immediate concerns of accomplishing the tasks ahead of them. These findings have implications on the structure and organisation of the teacher development course, and supervision and assessment of teaching practice. This experiment sought to re-examine stages of progression after taking care some of these

pitfalls.

Also, Smyth and his colleagues (1989) adopted a critical pedagogy of classroom practice to describe, theorize, and confront the teaching and learning process. The pedagogy attempts to inculcate the ability of 'empowerment' which involves an active critique and an uncovering of the tensions between particular teaching practices and the larger cultural and social contexts in which teaching is embedded. Through the analyses of some critical incidents, four forms of actions are pursued : (1) Describing (what are my practices ?), (2) Informing (what theories are expressed in my practices ?), (3) Confronting (what are the causes ?), (4) Reconstructing (how might I change ?). These questions attempt to help teachers begin to move beyond questions of technical competence and thereby challenge the rules, roles and structures in which teaching occurs. What is at issue here which has implications for this experiment is the occurrences and use of 'local theories' informing teachers' classroom practices and stimulating critical questioning so as to change educational practices by challenging the taken-for-granted assumptions.

The Experimental Procedures

Before the student teachers (STs) who were under my supervision went for their school experiences and practice teaching in a primary school as part of the course requirements of the certificate in teacher education programme at the Institute of Education in Singapore, they were briefed on the proposed model of

teacher professional development. They are introduced humanistic constructivist teaching and learning as one perspective that they can adopt when they play the role of facilitator of learning. This supplements other learning models or theories learnt in the theory courses. However, they are not reminded since then of this pedagogy in order that they can gradually feel the need to understand and develop it on their own. During the practice teaching period, the STs are required to do the following :

1. Describe in their diaries two critical incidents every week for the first nine of the ten weeks of practice teaching, one from their own experience and, preferably, the other from their cooperating teachers' (CTs) while assuming the role of facilitator of learning.
2. Attempt to account for the described events by asking themselves and/or their CTs such questions as "How these events have occurred ? Are these practices worth doing ? What is the hidden curriculum ? Are the practices moral and ethical in the light of the particular context they are in ?".
3. Identify assumptions, personal beliefs or established theories as expressed in these practices and indicate when they become conscious of these beliefs and theories and where do these beliefs and theories come from.
4. Suggest how they might do things differently and explain why such revisions might work.
5. Summarise in a few sentences what they gain from reflecting on the analysed critical incidents.

At the end of the 10-week supervised practice teaching STs were requested to answer the following questions, based as far as possible on evidence that they have previously recorded in the appraisal forms.

1. Summarise their views on how the process of learning occurs, ie. how students begin to know, and how they should teach students according to this view of learning.
2. State the type of teaching approaches/styles which they have developed or which begin to emerge from practice teaching. These approaches/styles should be those they feel most confident to deploy, and which can be judged by them to be more efficacious to the subjects and grades that they may teach in the future.
3. Summarise the qualities of their teaching and characteristics of themselves that they find students cherish and appreciate most.

Results of the Study

A wealth of information has been collected. For the purpose of this paper, which seeks to explicate and demonstrate the viability and benefits of the proposed teacher development model, I include for the following discussion one of my supervisee, Amy, aged 21. Excerpts of the 9-week teacher self-appraisal of critical incidents are shown in Appendix 1. Amy, and other supervisees as well, have been assured that she would not be penalised for exposing her weaknesses in trying out new ways of teaching or revealing her unsatisfactory practices in self- reports and post-observation

conferences. She knew that the supervisor's role is to help her to develop her teaching style according to her own characteristics, initiative and inclination. Assessment of her teacher development was not based on a skill- deficit model but on whether she feels confidence in and shows understanding of her teaching. During the whole practice teaching, she did not know that the whole exercise can be compiled into a research paper because the only intervention was the regular self-appraisals of the critical incidents interspersed within the practicum curriculum of the Institute of Education of Singapore.

1. Views on how the process of learning occurs

Amy started by saying "I cannot state definitely every classroom situation in which the learning process occurs due to its complexity, subtlety, and my own lack of experience". She equated learning with 'understanding' and 'reasonable retention' occurring within an environment free from fear, reprimand, and punishment. Students feel free to express and try out new ideas, and to make mistakes. Students learn and have a more lasting 'mental realisation' when engaging in a variety of activities designed to demonstrate conceptual understanding through applications. Learning tasks should be broken down so as to achieve a sharper focus and closer monitoring. Mental connection to some 'memorable expression or comment' that can arouse the interests of the pupils is important. Questions from pupils are signs showing their active attempts to learn, openness in mind, and being receptive to new

information. Questions from teachers keep pupils alert and make them think so as to reinforce what has been freshly acquired. Flexibility in teaching, such as asking pupils to spot and correct errors after a learning task, is crucial in increasing learning and retention. Lastly, sensitivity by the teacher to spot which part of the lesson is posing problems is important for evaluation purposes.

2. Views on the emerging teaching style

It may be difficult to use a phrase to describe her teaching style for the many subjects and primary grade levels she has taught. Instead, some excerpts of her own evaluations are provided here. Amy revealed that "I still maintained the basic precepts of teaching in which I started the lesson off with activities to capture the interests of the students... This will be followed by a more formal teaching period, in which the class will be seated and I conduct the lesson often with the help of overhead transparencies... I enjoy providing a large amount of materials and activities for the class... I also try to let the class do as much group work as possible... I am able to pick out several students who sometimes make a conscious effort not to be involved in the lesson... my lesson is always ... encourage students to look at a concept not strictly in a structural form but to be flexible... I was hesitant to impose too strict discipline on them fearing that it might stifle their desire to learn... the TP (teaching practice) has refined my methods in that there must be a need for organisation and some discipline. I try to maintain a friendly,

open atmosphere with a constant attempt to solicit feedback from the students".

3. Views of personal qualities that pupils cherish

Amy professed that it was her enthusiasm to teach and to see the children learn that she feels is the best aspect of her teaching style because it gives her energy to prepare materials and interesting activities for the students. She found students confide with her on personal matters such as relationships between children because of her friendliness and sensitivity to the emotions of the pupils. This might due to the fact that she never try to humiliate or ridicule the pupils. Instead she respected the personal dignity of the children, which she believed through developing better self-concept might affect learning outcomes.

4. Moralistic and ethical aspects of learning

A number of Amy's critical incidents revealed the need to seriously consider the humanistic and ethical aspects of learning. Amy was cautious in avoiding devaluing the self- concepts of the children. She wondered about the appropriateness of singling out pupils for remedial work. She has thought seriously on how to get the shy pupils out of their shells. She noticed that pupils took pride in presenting their good work to the class and were eager to be nominated by the teacher. She felt that some curriculum content may pose problems to different racial groups. She viewed troublesome pupils not as a nuisance but as friends who need help. She

encouraged cooperative group work because two persons' ideas are more worthwhile than just one. She realised the tensions between partners in group work if members of the group lose face in the competitions. She was fearful that weak pupils might be stifled if she limited the scope of the composition writing in order to have a sharper focus. She was aware of the importance of the hidden curriculum in inculcating values and fostering interests. Consequently, it has taken her quite a while in finding appropriate ways to manage student behaviours. During the practice teaching, she has enquired about the most appropriate way to group or individualise pupils in order to take care of this humanistic aspect of learning. Her concerns, classroom practices and personal qualities demonstrate some relevant contributing components of the moralistic and ethical enterprise of educational practice. Such components are often less valued in a competency-based teacher education programme.

5. Constructivist aspects of learning

Amy has revised her own personal theories on the process of learning since she first met her supervisor before her practice teaching. At that time, she indicated that the instructional role of a teacher is to impart knowledge to the pupils. She gave no further explanation on how pupils got to know although she had attended some courses on theories of learning in the Cert Ed programme. She knew of educational theorists like Piaget, Bloom, Gagne, and Vygotsky but she had vague ideas how she could make use

of these theories in her teaching. She was fascinated when she was introduced to the ideas that children bring different ideas into the classroom and that children's conception of the world are often at variance to the adult's. Since then, her supervisor has not directed her into any particular world views on the process of learning. As such, when she attempted to make sense of the learning process she has used her own words that as the teacher development progressed came closer and closer to that of the 'meaningful learning' literature. Amy's critical incidents are useful in understanding how beginning teachers began to adopt a constructivist pedagogy as a result of her own personal construction of the pedagogical knowledge during the practice teaching. The process of teacher development as applied to Amy may be considered as doubly constructivist in that the beginning teacher and her pupils are actively building up themselves and both are helping to contribute to their meaning construction with the consequences of enriching their respective knowledge bases.

In the self-appraisals of the critical incidents, Amy realised that it is important not to ignore pupils' mistakes and that it is through mistakes that teachers can contrast two learning situations. She attempted to devise her teaching based on pupils' needs although she acknowledged that she has to comply with the school administrative and examination rules. She suggested that learning experiences can be cross-curricular and have got to be authentic and contextualised. She pointed out the importance of prior learning and the worth of linking activities in a logical

manner. She argued that children cannot think flexibly because teaching is often rule- or procedure-based and one and only one method is shown on the blackboard. A surprising turning point of her progression is that mid-way in her practice teaching she has abandoned the use of behavioral objectives in the lesson plans but opted for phrases emphasising meaningful understanding and its accompanying processes. The latter teacher appraisals reveal clearly how this shift has come about although the idea of meaningful learning and constructivist teaching are far from complete. It has been taking shape since then.

Amy has adopted a more assertive attitude towards the outcomes of schooling. She thought that teaching does not guarantee success but analytical teaching does facilitate learning. She found out that some children had a very interesting and unique way of solving their problems which to them would make sense. She asserted that comprehension depends on the ways pupils interpret the information. Consequently, pupils cannot learn in a situation when the teacher randomly throws out ideas without going through them in a sequential manner. Judging from the ways she teaches, it would appear that what she meant by 'sequential' is that the learning activities have got to be structured. Actually, she has discussed the benefits to branch out from time to time without digressing too far during a lesson in order to stimulate an interest in other related areas. Careful lesson preparation, as observed by her supervisor, is the hallmark of her teaching and on this process component she has earned a good grade in her practice teaching.

Discussion

This experiment provides evidences and insights on a number of issues and controversies in the teacher education literature, namely: (1) Obstacles in teacher professional development, (2) Changing roles of teachers, (3) Autonomy in teacher decisions.

1. Obstacles in teacher professional development

The obstacles occur at different time points and within and between individuals. The proposed model has made clear four essential components, together with a humanistic and constructivist view of teaching and learning, which comprised the moralistic and constructivist enterprise of educational practice. Amy could quickly progress to explore different classroom processes because she was not concerned in solely demonstrating and passing the requirements of the practice teaching. Instead, she has been assured that it is not the orchestration of pedagogical skills that is of primary importance. What she has been advised was to try out how she can engender learning and become confident in it. As revealed by the reported critical incidents and her supervisor's observation schedules, her progression moved more and more inquiry-oriented deploying and sharpening the relevant pedagogical skills as needed. She has thought through how to do groupings and communicate her expectations effectively. She has also conducted some primitive forms of action research in order to test out the required logistics. As the progression went on she began more and more concerned about how pupils get to know. In this regard, a lot

of feedback and evaluation mechanisms were beginning to be built into the lessons all contributing to construe how the misconceptions have come about. Unfortunately, being a secondary graduate, her limited subject matter knowledge base has been a constraint to her understanding the process of metacognition and metamemory. Her report on encouraging pupils to take notes is a case in point (see CI 9 in Appendix 1).

A critical approach to reflective teaching requires open-mindedness, assertiveness, and critical thinking skills. One has to challenge taken-for-granted assumptions, established practices, and one's own theories of action. It appears that even a cooperating teacher, supposedly an expert teacher, may not help to initiate the beginning teachers into this kind of teaching. Very often, these cooperating teachers can be an obstacle as well because they sometimes are even less receptive to new ideas and criticisms than the beginning teachers. Nonetheless, collegial support and school resources are extremely important. Frustrations often arise when the school cannot support certain kind of teaching such as an inquiry approach because of the 'overuse' of resources by the beginning teachers. Sarcasms are also heard claiming that innovative approaches are useless and contrary to established practices when the beginning teachers resumed the full work load of a normal teacher. Currently, all beginning teachers in Singapore are given a lighter workload during their practice teaching. These mishaps are unfortunately the realities that beginning teachers like Amy need to confront. However, Amy felt much more comfortable

when she was reminded by her supervisor that ten years teaching experience may not be better than her one year because the ten years may simply be one year repeated ten times. In order to grow and glow one often need to compete with oneself if a model target is not available.

2. Changing roles of teachers

The five instructional roles have helped the beginning teachers to focus their efforts in order to build up expertise in teaching, irrespective of which type of teaching style to be adopted. If the proposed model of teacher development is pursued, beginning teachers will have a different role to play in engendering learning. A teacher is no longer viewed as a transmitter of knowledge and culture. Instead, she is viewed as a diagnostician of meanings and a mediator bringing children's personal meanings closer to the socially-mediated public knowledge because classroom practice is a moralistic and constructivist enterprise. Good subject matter understanding and well-used pedagogical skills should not be valued as the sole criterion of good teaching. Teacher accountability should less be focused on academic learning results and demonstrated teacher competencies alone. Instead, equal attention should be paid on the hidden curriculum and the process of learning. Pupils learn because they have a desire to learn and teachers attempt to foster this process through the provisions of relevant learning experiences. Teaching should in no way guarantee the learning outcomes because teachers are unlikely to have

identical theories of action and free to choose the student intake. Instead, teachers should be encouraged to explore differential learning rates and treatments without forfeiting the values of the non- cognitive outcomes of schooling. After all, up to now, there is no teacher-proof pedagogy and it would be harsh to pretend that good and effective teaching can be evaluated with confidence and have teachers graded accordingly. It is from a developmental perspective and through a critical approach that teachers should best be evaluated.

3. Autonomy in teacher decisions

Controversies often arise on the latitude of autonomy in teacher decisions especially for beginning teachers. If teacher development is meant to be a life-long continual self-renewal process, then it would be desirable to initiate the beginning teachers into this practice of reflective teaching. The reasons are simple. Teachers are adult learners and certainly nobody is keen on being monitored. Rather, they would like to be responsible for their development. Also, once teachers are within a school system already deep-rooted in established practices they are more likely to conform than to renovate or innovate. However, we should remember that the classroom is a relatively private environment in which the teacher can sensibly structure learning experiences for the pupils. While the prescribed curriculum is relatively fixed, the ways to achieve it is by no means uniform. Consequently, the proposed model alerts the teachers that while they engage in their classroom practices

they have to consider that they are educating children in a social organisation within a cultural context. Revising classroom practices is the norm rather than the exception because our views on teaching and learning are changing also. Educational researchers and practitioners are constantly constructing ideas on how our children get to know and fit into the society and culture. In a nutshell, teachers need to be aware that making the schooling process more moralistic and constructivist is also making our children more human and cognisant.

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Appendix 1:

Excerpts of the critical incidents (original writings in quotes, clarifications from this author in brackets)

CI 1 : Identification of students for remedial teaching (week 1)

"Peiqi (a primary 4 girl) must have felt a little embarrassed and to a large extent, uncomfortable. But so long as the teacher does not go out to ridicule the students, it might seem not wrong to call out pupils and single them out (for remedial work)... Those students who are sensitive or have an inferiority complex may not be able to concentrate on the 'on-the-spot' teaching by the teacher.... I think it is difficult for a student to see light in a sum (a problem given to the pupil) when the environment around her is tense and distracting."

Amy then devised a strategy of questioning and after-school coaching which she is confident that it will work. She believed that it is important not to ignore pupils' mistakes.

CI 2 : Encouraging pupil participation using praises (week 1)

"But the atmosphere was quite unbalanced, as I always noticed that it was always the few responsive ones who seem to be participating in class. I have noticed this especially quiet girl ... Quite sub-consciously and without hesitation I picked up her piece of work and showed it to the class. She was a bit flustered when I praised the neatness and accuracy of the work. In fact, I highlighted and focused my praise on the work done rather than the person...I just could not fathom as to how to get the shy students

out of their shell. Calling them to answer questions that they have not volunteered did not help... Basically, if praise is sincere and no sarcasm is involved, students will be able to reciprocate your warmness and sincerity....what I'm clear about is that one's self-esteem will be boosted if one experiences recognition and academic success set out at reachable goals."

Amy argued that teachers should ask themselves that "what is actually this boy's needs when he is so exceptionally quiet ?"

CI 3 : Bringing pupils on-task by pacing and feedback (week 2)

"Apparently, many pupils are off-task, and could not achieve the objectives that I had set out for them....I retaught the lesson ... I asked the students to focus on two aspects of the composition.... I set the class to do their first draft on a blank overhead transparency (in small group work)...During group- work, the pupils learn to accept their own and other people's ideas.... Any lesson can always be evaluated and taught again to achieve better effect. The significance is not so much on checking whether students have produced good results but to ensure that learning has taken place. Teaching does not guarantee success, but analytical teaching does certainly facilitate learning...Very often, students have difficulty in pinpointing what's wrong with themselves, why they fail this and that."

Amy has added that students learn better if they are given the opportunity to learn with the aid of modern technological equipment. She observed that pupils have taken a lot of pride in

carefully writing out their answers on the transparencies before these were displayed in front of the class.

CI 4 : Stimulating pupils on a spelling exercise (week 2)

"According to popular and also personal belief, students do not profit from learning out of drill and sheer memorization. In order to get a word implanted in their memory, children need to receive some form of experience with that word. That experience might be a memorable one for them which can aid them in spelling. Experiences has got to be authentic and contextualised.... Once in a while, I might make spelling tests more fun and create them as a game or little quiz.... Pupils learn best the spelling of the words only when they are confident of knowing the meaning of the words first....Words are not just mere patterns but they are messages." In the Singapore context, Amy has made a valuable point that the context in which the meanings are embedded should not be culturally biased because, in the lesson she experienced, the Malay pupils appeared to be deprived of the learning when a Chinese TV serial has been used for illustration purposes.

CI 5 : Improving communication skills through clear instruction (week 3)

"Keeping in mind last week's science lesson in which there had been a breakdown in communication between the teacher myself and the students... I decided to improve on it during this lesson...I have implemented it (clear instruction with checks for feedback) quite

a number of times then and found that it is even more effective than the teacher who time and again repeats and repeats his/her instructions without the pupils listening and understanding."
Amy thought that it is worthwhile to commit mistakes made previously because it is through mistakes that one can compare and contrast the two learning situations.

CI 6 : Linking concepts for better understanding (week 3)
"... it is important that we try to develop children's thinking into a logical manner. This is worthwhile especially in mathematics where many students have problems in working out things in a sequential manner.... pupils, I find, are happier in learning when they can make links with what have learnt previously to now that is being taught. Pupils cannot learn in a situation when the teacher randomly throws ideas without going through them in a sequential (structured) manner."
Here, Amy has indicated the importance of prior learning and the worth of linking learning activities in a logical manner. If achieved, pupils will have a better concept for each step they have performed.

CI 7 :Using peer influence in managing student behaviours (week 4)
"I interrupted the lesson by making eye contact with Yongliang who was not paying attention.... It was not the first time...It was time I thought to suggest to the class and Yongliang that the teacher and students must hold a short talk so as to negotiate

things ...The class agree to ... remind Yongliang (to pay attention) whenever he is off-task or not paying attention so as to prevent getting a demerit point...He showed keen participation and raised up his hands to answer questions... One thing I was disturbed about was when he came up to me and told me that he agreed to have everybody help him but Firdaus, because he dislikes him a lot... I have come across this simple but effective kind of practice in a book called 'managing misbehaviors'... it works marvellously for this class... I learnt that peers too can help the teacher to manage mishaviours."

Amy explained further that friends very often are the next closest people students go for help, apart from the family. Friends often surprisingly know the student's personality and character better than the teacher themselves. However, she was not sure whether this method of managing misbehaviour is effective over a longer period of time. The most important message is that the troublesome pupil is no longer viewed as a nuisance but as a friend who needs help.

CI 8 : Helping pupils to make friends (week 4)

"Yongliang is one who cannot answer when I asked him to repeat what I've just said. Firdaus is one who goes to swings of mood... The two boys are also rivals with each other... Today, during composition, I picked them out as a pair group ... I am going to help them with their composition... The first question I asked was 'Do you like to talk to each other ?'. They simultaneously shook and turned away their heads giving an emphatic 'no'... According to

the pictures (in the worksheets), the composition starts with two good friends who decided to go a fishing competition one day (pupils need to write according to the pictures). I gave a little suggestion by saying 'why not both of you write about each other ?' (instead of using the characters in the pictures). There was a split second of silence. Then, both broke into their shyest smiles. Frankly, I've never seen anything so amazing. I waited tensely to see what names they would give to their composition characters. Surprisingly, both of them wrote down both names ! There was a slight exchange of shy smiles, then both of them were too nervous to say anything for a while except read aloud the words as they wrote them down. The ice was finally broken when for a touching moment, they bend their heads to check up the spelling of each other's names, engraved on their name tags (on their shirts)."

Amy's report looks like a drama. She has gone on to describe how they use jokes to gradually ease the tense situation and volunteer to share things between themselves. She believes that acceptance of one another originates from one's intrinsic desire to communicate with each other and two persons' ideas are certainly more worthwhile than just one.

CI 9 : Encouraging pupils taking notes (week 5)

"My lesson today was rather heavy in content... I flashed on the OHT and asked the pupils to take down some notes regarding the features expected to occur at each stage of the animal's life cycle. The purpose of asking them to take down notes is what I

believe to allow children to think as they write and be able to take in information in written form. I have also certain special words which I like them to take note of.... the information given in the text has become too scanty so much so that the students do not benefit much from just picking up knowledge from one source. ... my assumption is that not all students can learn by the discovery method. More often than not, we must provide them with factual knowledge first before they can actually learn further. This acts as their pre-requisite condition and a guideline for further learning..."

Amy, however, was quick to acknowledge that provision of factual knowledge through notes-taking may not be the most effective way in engaging and stimulating pupils' thinking. She asserted that learning can be cross-curricular and in this way she can bring science into the English classroom. Anyway, she believed that notes-taking can help to combat forgetting and teachers should go over the notes with the pupils again as a revision.

CI 10 : Making the vocabulary lesson interesting (week 5)

"The lesson was to be conducted as a vocabulary game for the pupils. Each pair of pupils was given a picture which tells the meaning of a word.... Everybody was waiting, reading, watching the OHT to see if the given word (on the transparency) matches with their pictures.... The colourful transparencies and clear diagrams ... have helped made the lesson successful.... Giving them a task each to do helps to make the lesson more meaningful because they

realise that they are responsible for their own learning and their learning outcome.... very often a pictorial context is more helpful than a verbal one... Question should not be such that they are out to ridicule their level of intelligence."

Amy, in this incident, has highlighted the importance of lesson preparation and the need to motivate students to pay attention to the different meanings of a word when used in different contexts.

CI 11 : Changing teaching method for meaningful learning (week 6)

"... I then gave each pair of students different pictures. Student A is given a picture different from student B. Student A must give a general description of his picture using adjectival phrases and student B draws it on paper, and vice versa... I would like to expose students to more learning through various other methods and not just through the usual drill... The students must realise that games are only meaningful when they see the rationale behind it. In this way, teachers and students can then safely say they have learnt something through the play- way and not feel bad about it or thought they have wasted precious time... Drawing provides meaningful learning."

Amy has used pictures for the first time to illustrate the concept maps she obtained from the pupils. As usual she cherished the friendship that pupils develop amongst themselves in the process of learning. Furthermore, she described the tension between group members and blame on their partners if they fail to achieve the assigned task or lose face in group competitions.

CI 12 : Helping pupils to write descriptive essays (week 6)

"Before the pupils write out their composition, I will engage them in some pre-writing activity .... I emphasised that the first (paragraph) requires a description of the shopping place ... the second is a narration of a shopping visit... They (the pupils) have written out of point and were not answering the question... On the surface, the problems could have indicated a misinterpretation of the essay, but looking at it in a greater depth, the problem reveals an inability of students to handle descriptive essays... By giving them a limit to the use of 'I', it decreases their tendency to write a narrative essay... From this incident, I learnt that most students find narrative essays easiest to tackle, followed by descriptive essays and then argumentative essays."

Here, Amy indicated for the first time she cannot make out what the hidden curriculum might be. Regarding this, her supervisor suggested that while the pupils are describing their experiences, the teacher might remind them that it is equally important to describe their feelings in their experiences.

CI 13 : Remedial teaching on descriptive essay writing (week 7)

"It was a reteach of the previous composition lesson on the theme 'shopping'... I requested the students that they limit the use of the pronoun 'I'... I suggest to them that they describe ... I hope the students will find that a reteach is not a boring and repetitive lesson, going through mistakes and correction. A reteach is also a modified lesson with modified learning and instructional

strategies which the teachers wish to imbue in students a correct approach towards learning... A reteach, I feel, is not a mere simplification of the lesson ... It is to breakdown the learning tasks so that children can achieve and master one form of learning before he goes on to the next one."

Amy was not sure whether she was limiting the student's potential and restricting their creativity by asking them to minimise the use of the pronoun 'I' and to write mainly in the present tense. She acknowledged that she cannot help thinking that the pupils may be stifled and have little scope for their writing.

CI 14 : Error analysis of pupil's understanding (week 7)

"I found that the child had a very interesting and unique way of solving her problem, which to her would make sense....Children might seem frustrated at not knowing how to answer the problem... Ultimately, comprehension of the problem is reached as the reader gradually realises that comprehending the problem is dependent on the reader himself and the way he interprets the information.... The teacher could perhaps gave a concrete example which is close to their daily lives."

Amy has suggested the causes of some misconceptions of fractions and speculated some teaching strategies that might work. She thought that a variety of exercises are also needed as prerequisites.

CI 15 : Experimenting meaningful learning (week 8)

"My two main objectives for the lesson were that pupils should be able to locate the main ideas and details within the reading comprehension passage proper and to construct meaning when reading in the true sense of the words using their prior knowledge.... I requested that they first read selected questions (question numbers given) before reading the passage... Reading for the second time requires them to look for certain characteristics of ... I then planned an activity for the children which will serve to give me immediate feedback on whether they have understood the passage after reading on their own. Students will be expected to be able to spot the six mistakes in the diagram (a nicely drawn cartoon on OHT) and using these errors to highlight and reinforce the concepts serve to focus the significance of how the correct answer is derived rather than what is the correct answer ...The instructional approach is of a student-designed type where the striking errors will not only be amusing to children, but will also stimulate their minds through an indirect approach."

In this incident, Amy has shown her concern on a number of factors of learning such as student's ability and interests, pacing and difficulty of learning materials, instructional sequence and wait-time, and management of student problems. She began to think that instructional procedures can be of the exploratory, discovery or inquiry type.

CI 16 : Understanding children's misconception (week 8)

"As I marked through the work, I was very much surprised at the misconceptions (multiplication of two 2-digit numbers) that a handful of students still had over the topic... I had anticipated errors perhaps on the position of the place value, but instead errors like confusion over which multiplier should be dealt first, surfaced.... Pupils have not understood the logic of the multiplication algorithm. Because of the one and only method shown on the board, they have become inflexible in their mathematical thinking and have just been trying so hard to follow the 'procedures & rules' set out for them....it will be unjust to see educators viewing demonstrating algorithmic proficiency as the most important goals of instruction rather to see thinking, reasoning and solving problems as their main rationale."

Amy proposed and gave an example of a geometric model linking the procedures of multiplication with the area segments of some arranged rectangles. She was not satisfied when pupils understand multiplication by rote learning of rules because learning becomes mechanical and meaningless.

CI 17 : Enhancing success rates and time-on-task (week 9)

"The activities are as a result of my intention to attain short term steps and objectives so as to achieve long-term goals like more difficult aspects of ... The directions and instructions for the tasks were clear and explicit. Students stayed engaged in their activity, thereby increasing the rate of on-task behaviour. In

order for more effective learning to take place and perhaps 'waiting time' to be hopefully reduced considerably, I might improve my procedures for picking up, changing or returning equipment... I might have a number of 'satellite' equipment areas for children."

Amy, in this incident, has described how she could conduct the lesson so that maximal feedback can be obtained from the small groups and individual students. She made a point that any feedback given should be specific and pertinent.

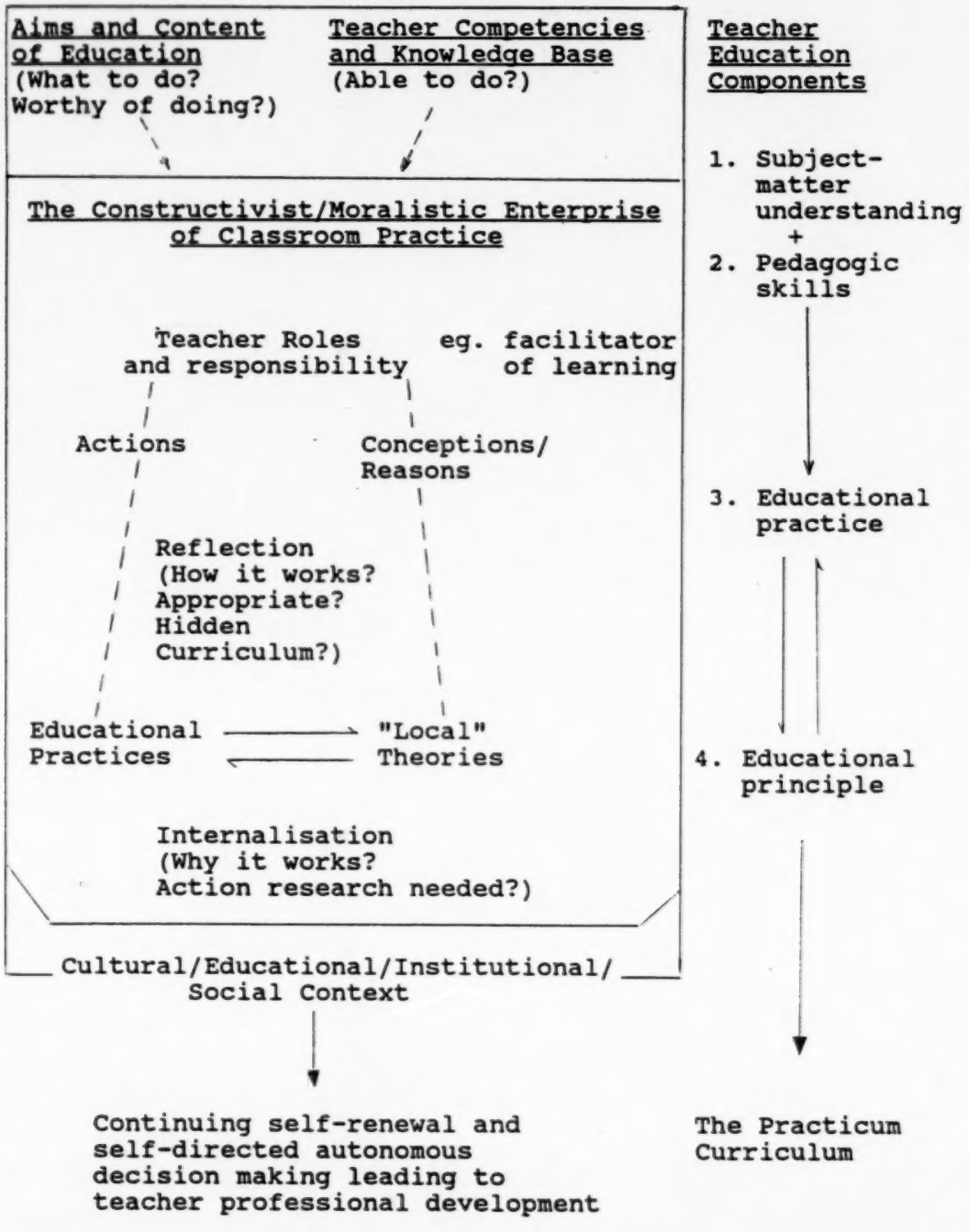
CI 18 : Sharpening planning and organisation skills (week 9)

"The incident occurred at the end of the lesson ... My CT approached me to give comments on the lesson. To my pleasant surprise, she praised me for preparing the apparatus before hand and arrange it in relevant group order ... This made me remember a passing comment by one of my students ... 'Wah, so nicely arranged, teacher !'.... I myself believe that good preparation cannot work without enthusiastic teaching, good communication and sensitivity on the part of the teacher. However, good preparation helps complement the positive aspects of a teacher. They allow the teacher the clear and orderly environment in which the teacher can effectively bring across her message...the teacher's realm of responsibility lies not just in the thirty or sixty minutes during the lesson, but may have to extend to more than that."

Amy professed that she did not realised the importance of pre-lesson preparation until she began this practice teaching. She now realised the need for good time management and organisation.

Figure 1

The Practicum Curriculum:
A Model of Teacher Professional Development



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